





FM 3-65

AR DEPARTMENT FIELD MANUAL

CHEMICAL WARFARE SERVICE

CHEMICAL DEPOT COMPANY

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(See also paragraph 23b, AR 380-5, 15 March 1944.)

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WAR DEPARTMENT FIELD MANUAL
FM 3-65

CHEMICAL WARFARE SERVICE

CHEMICAL
DEPOT

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Frank B. Rogers



U.S. WAR DEPARTMENT • 1 DECEMBER 1944

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WAR DEPARTMENT,

Washington 25, D. C., 1 December 1944

FM 3-65, Chemical Depot Company, is published for the information and guidance of all concerned.

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By order of the Secretary of War:

G. C. MARSHALL,
Chief of Staff.

Official:

J. A. ULIO,

Major General,

The Adjutant General.

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For explanation of symbols, see FM 21-6.

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PURPOSE

This manual is published for personnel of the chemical depot company. It discusses the mission, organization, equipment, training, and operation of chemical depot companies, and lists references useful to these organizations. It is not an exhaustive compendium of information, but rather outlines procedures, refers interested personnel to other manuals which make more complete studies of depot operations and allied subjects, and, in general, is a handbook for chemical depot personnel. Major emphasis is placed on operations at field supply points.

Chapter 1

INTRODUCTION

1. MISSION. The chemical depot company establishes and operates installations to handle chemical warfare supplies in accordance with general supply principles outlined in FM 100-10. Its duties fall generally into two categories:

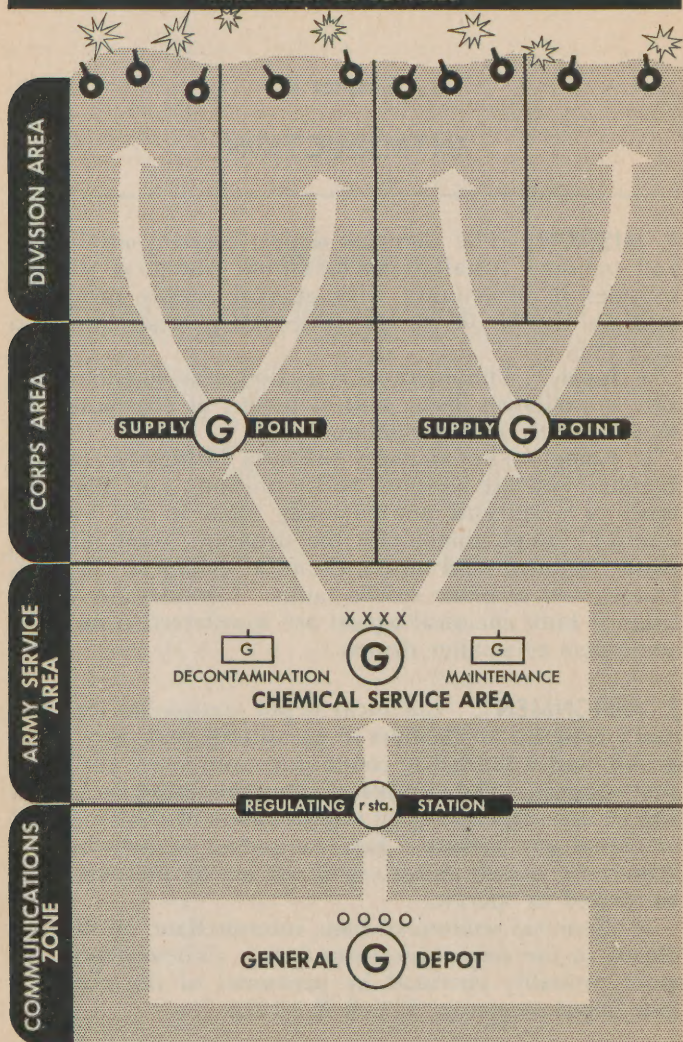
a. Supply. This involves reception, classification, storage, surveillance, issue, and shipment of chemical warfare supplies and equipment.

b. Filling. The company prepares fillings for certain chemical warfare weapons and munitions, and fills some types of munitions not normally filled in the zone of interior. Depending upon the situation, these may include chemical land mines, chemical cylinders, chemical bombs, and airplane smoke tanks. Considerable quantities of bulk chemical agents are transferred from large containers to smaller drums.

2. ASSIGNMENT. Chemical depot companies are normally assigned to theaters of operations and from there are allotted as needed to communications zones and army commanders. The number of companies assigned within any theater depends upon requirements of contemplated or actual gas warfare. Full companies or detachments (the latter usually consisting of one service platoon) may be needed to operate:

a. Chemical sections of base, intermediate, or advance depots in the communications zone. (These depots are more probably operated by personnel of the chemical base depot company, T/O & E 3-117.)

LOCATION OF CHEMICAL DEPOT COMPANY, AND FLOW OF SUPPLIES



b. Chemical sections of army depots, or army chemical supply points.

c. Chemical supply points in corps or division areas.

NOTE: Depot sections of chemical composite companies are normally assigned to task forces. The number of such sections and their size are governed by the number and size of small general depots and special supply points needed for the mission. These decisions are a responsibility of the theater commander.

3. LOCATION. a. **In the communications zone,** chemical depot troops function at either branch or general depots, which may be located in base, intermediate, or advance sections of the communications zone.

b. **In army service areas,** chemical depot troops may operate the chemical section of an army general depot, or a separate chemical warfare supply point, preferably at a central point in the service area.

c. **In an advance movement,** chemical depot troops may operate forward supply points established in corps or division areas. Actual depot sites are determined by G-4 upon recommendation of the appropriate chemical officer after his reconnaissance. As the operation develops and units move forward, communications zone depot personnel may take over supply points in the army service area, permitting the army to develop new depots at more advanced locations.

4. COORDINATION WITH OTHER SERVICE UNITS. Uninterrupted flow of supplies to using troops can be maintained only through close cooperation of all service units:

a. **In the communications zone,** activities of chemical depot troops and depot troops of other services are coordinated by the general depot commander, operating under the communications zone commander. Coordination is achieved in assignment of storage space, use of the common labor pool, utilities, and transportation.

b. **Between the communications and combat zones,** co-

ordination in supply is achieved under supervision of the regulating officer, an agent of the theater commander. He controls all supply and evacuation traffic, receives copies of all requests for supplies, and uses these copies as a basis for establishing priority in movement of supplies forward from the communications zone.

c. In the combat zone, chemical depot troops help other service troops when the demand for chemical supplies is below average; conversely, other service units assist the chemical depot company when the demand for chemical supplies is above average. Additional help is furnished by details from army quartermaster service organization, supplemented at times by civilian labor, and by transportation from the army motor transport pool. Chemical depot, decontamination, and maintenance companies are usually grouped in what is known as a *chemical service area*.

Chapter 2

ORGANIZATION

5. BASIS OF ORGANIZATION. Fundamentals governing organization and operation of a chemical depot company are essentially the same as those governing tactical units. The company is organized for administration, discipline, control, and defense, as well as for technical supply operations. Details of the organization as established in T/O & E 3-67 are shown in figure 3. Certain modifications in formal organization may be required by special circumstances. These include:

a. Service platoons may function as individual units when operating forward supply points, each platoon being in charge of a supply point.

b. All personnel may be pooled and detailed to special duties when the company is operating as a whole. For example:

- (1) All three ammunition sections can be pooled and detailed to operate the ammunition storage section.
- (2) All three toxic gas sections can be pooled and detailed to operate the toxic gas storage area.
- (3) All three general supply sections can be pooled and detailed to operate the general supply storage area.
- (4) All motor vehicles and motor personnel can be pooled and detailed to jobs as needed.
- (5) Administration personnel in each platoon headquarters may be pooled in the depot administration office.

6. COMPANY HEADQUARTERS. This unit consists of

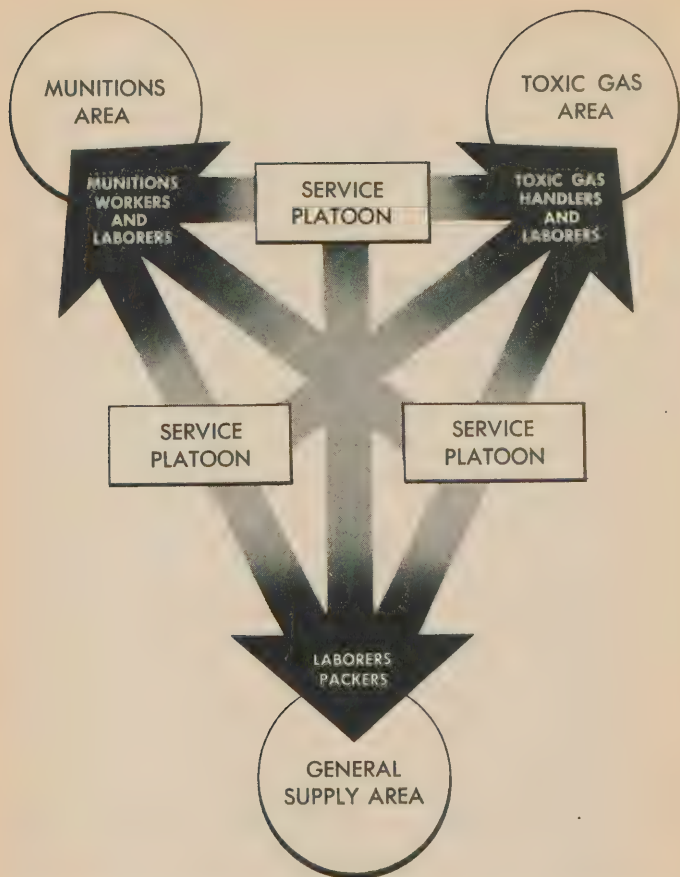


Figure 2. Suggested distribution of service platoon personnel among three general salvage areas.

administrative, supply, mess, carpentry, and motor personnel concerned with supervision of depot operations and with interior administration. Duties of key headquarters personnel are:

a. Depot supply officer (normally the lieutenant in company headquarters) is responsible to the company commander for training and functioning of depot personnel, aided by the platoon commanders.

b. Chief clerk is the depot supply officer's principal noncommissioned assistant, and as such is one of the most important men in the organization. He supervises and coordinates all activities of the depot administrative department.

c. First sergeant supervises preparation of all routine company reports and correspondence, transmits orders of the company commander to enlisted personnel, keeps the company commander advised regarding problems of enlisted personnel, and performs other duties as designated by the commander.

d. Chief storekeeper assists the chief clerk in supervising receipt, inspection, storage, and issue of supplies. He controls assignment of space and the storage of supplies, supervises packing and crating of supplies, expedites incoming and outgoing shipments, supervises inventories, and maintains necessary files and records.

e. Mess sergeant is charged with procurement and storage of food, preparation and service of meals, and supervision of mess personnel.

f. Supply sergeant handles all unit supplies and equipment, maintains records of property issued to men, assists the company commander or supply officer in making periodic inventories of property, and advises them regarding shortages, overages, or supplies needed.

g. Motor sergeant is in charge of vehicles assigned to the company. His automobile mechanics handle second echelon maintenance. The sergeant is also charged with training drivers.

h. Company clerk handles all personnel matters and other duties assigned by the first sergeant. He is also classification specialist for the company.

i. General clerk is in charge of clerical duties in the depot office, and handles correspondence.

j. Stock record clerk assists the chief clerk as required. He is familiar with all phases of the supply system.

CHEMICAL DEPOT COMPANY

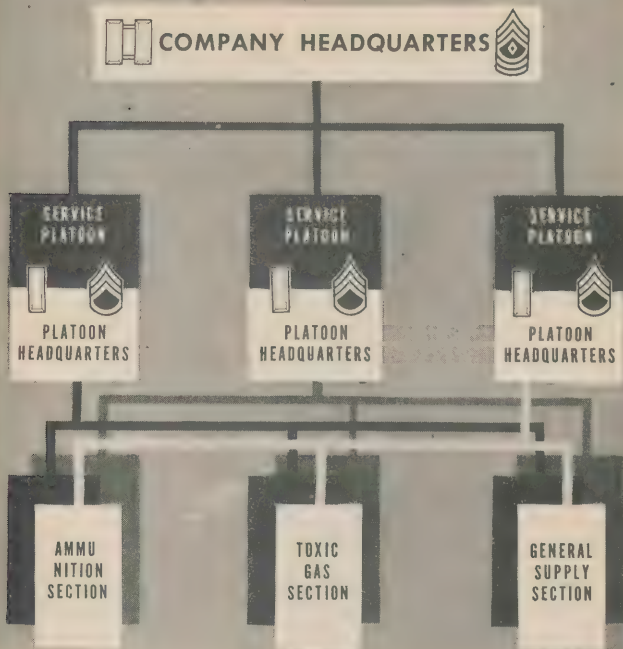


Figure 3.

7. SERVICE PLATOONS. There are three such units charged with actual handling of supplies flowing through the depot. Each platoon is organized and equipped to operate a separate depot or subdepot. Duties of key platoon personnel are as follows:

a. **Platoon commander** is responsible to the company commander for efficient training and functioning of his platoon, and for the serviceability of all supplies and equipment entrusted to his care. When the platoon is operating apart from the company, he becomes depot supply officer.

b. Warehouse foreman is the platoon commander's chief noncommissioned assistant. When the platoon is operating separately, he becomes, in effect, chief clerk. When the platoon functions with the company, he is chief assistant to the commissioned officer in charge of one of the storage areas. He carries out orders of the depot officer regarding allocation and control of storage space, and supervises preparation of shipments.

c. Assistant chief storekeeper is the warehouse foreman's assistant. In detached operations, when the warehouse foreman is serving as chief clerk, the assistant chief storekeeper supervises receipt, storage, and issuance of supplies in the storage areas.

d. General clerk is clerical assistant to the platoon commander and warehouse foreman.

e. Stock clerks, both record and control, operate in the depot headquarters when the company operates as a whole. When the platoon operates independently, stock record clerks serve in depot headquarters and stock control clerks in the storage area.

f. Motor personnel are in charge of platoon vehicles.

g. Ammunition section personnel, headed by the ammunition sergeant, are in charge of the ammunition storage area when the platoon operates alone. When the company operates as a whole, they are pooled with ammunition sections of the other two platoons to handle the ammunition storage area.

h. Toxic gas section, headed by the chief toxic gas handler, operates in the same manner as the ammunition section, being in charge of the toxic gas storage area in independent platoon operations.

i. General supply section, headed by the storekeeper sergeant, is in charge of the general supply section of a sub-depot when the platoon operates separately. When the company operates as a whole, it is pooled with other general supply sections to operate a larger general supply storage area.

Chapter 3

EQUIPMENT

8. WEAPONS. Depot troops are provided with small arms for personal protection. All personnel are issued carbines or M1903 rifles. Fifty-caliber machine guns are issued to platoon headquarters. The company has no organic defensive equipment other than these weapons.

9. TRANSPORTATION. Enough vehicles are provided for normal field operation. Included are 2½-ton trucks, a ¾-ton weapon carrier, a ¼-ton truck, swinging-boom crane trucks, and trailers. Additional transportation needed for moving large quantities of supplies is obtained from the army transportation pool. The theater commander has authority to assign additional transportation to the company if necessary.

10. CHEMICAL HANDLING AND LOADING EQUIPMENT. **a. Handling equipment.** Swinging-boom crane trucks and chemical trailers are assigned for handling bulk chemical containers. Additional equipment, such as fork-lift trucks, roller conveyors, and chemical handling trucks may be assigned by a theater commander.

b. Filling equipment. Chemical land mines are filled with field filling apparatus. Airplane smoke tank filling lines, valve replacement mechanism, and filling and charging apparatus for portable chemical cylinders are also provided. Additional materiel is provided if airplane smoke tanks are to be filled. Pipe and pipe fittings, necessary for improvised field filling apparatus, are available from the Corps of Engineers.

c. References. All transportation and field filling apparatus listed above are described in TM 3-255, with the following exceptions: the M2 field filling apparatus for land mines is covered in TM 3-300, and filling and charging apparatus for portable chemical cylinders is covered in TM 3-315.

11. COMPANY EQUIPMENT. The organization is provided with all necessary organizational equipment as listed in T/O & E 3-67.

Chapter 4

TRAINING

12. OUTLINE OF PROGRAM. **a. Introduction.** Training is outlined in the current mobilization training program for Chemical Warfare Service units. It consists of a 6-week basic training period, followed by 8 weeks of technical instruction and 3 weeks of field training. Basic training is continued on a reduced scale during the technical phase to permit practical application of military fundamentals.

b. Objective. Training is aimed at development of personnel capable of operating depots in a theater of operations. This requires thorough grounding in the principles of receipt, storage, and issue of chemical supplies. It also requires a practical understanding of military tactics, especially those of defense, since the company provides its own security. No man in the organization is exempt from training in security measures.

c. Methods. Realistic training is essential if men are to face combat situations with confidence. Training is conducted under field conditions insofar as possible. *Night operations are stressed, because service troops in combat areas usually work at night.* A deliberate effort is made to confront the organization with as many obstacles as possible, as this develops self-reliance and individual initiative.

13. BASIC TRAINING. This program teaches the raw recruit fundamentals of the school of the soldier. As outlined in the mobilization training program, it includes such subjects as dismounted drill, physical conditioning, rifle marksmanship, marches and bivouacs,

field fortifications, and organization and defense of rear areas. Commanders of units preparing for depot operations impress upon their trainees the importance of these subjects in particular:

a. Recognition of enemy aircraft and enemy armored units.

b. Defense against aircraft, mechanized units, ground troops, and chemical attack.

c. Construction of hasty field fortifications.

d. Problems incident to operation under various climatic conditions.

e. Map reading, including study of foreign maps.

f. Methods of camouflage, and camouflage discipline.

14. TECHNICAL TRAINING. a. **Objectives.** This phase of the program is specialized. Its objectives are to select men for individual jobs on the basis of natural aptitudes and civilian qualifications, to train them in these specific tasks, and finally to weld the finished group of specialists into a smooth-functioning organization. Included in the last named objective is the task of familiarizing each man with at least one job other than his own. This prevents a breakdown in company functions resulting from sickness or combat losses.

b. **Methods.** Individual and group training are carried on at the same time. Each man develops skills required for his particular job, and simultaneously applies those skills in training operations of his company. Commanders and junior officers outline specific training programs for cadre and each type of specialist, continuing these programs permanently.

c. **Subjects.** In addition to special training for individual jobs, the entire company is instructed in certain general depot subjects until complete proficiency is attained. These include:

- (1) Safety precautions in handling chemical warfare materiel.
- (2) Classes and items of chemical warfare supply.
- (3) Methods of storage.
- (4) Methods of packing.

EVERY MAN IN THE COMPANY



CAMOUFLAGE DISCIPLINE

ACTIVE SECURITY



CLIMATIC PROBLEMS

DEFENSE AGAINST GAS



DEMOLITION OF MATERIEL

DECONTAMINATION

MUST UNDERSTAND:



HASTY FORTIFICATIONS



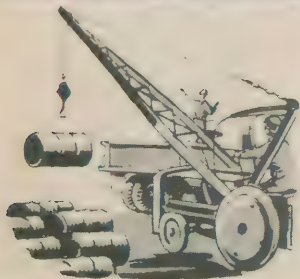
TRAFFIC CONTROL



CLASSES OF CHEMICAL SUPPLIES



STORAGE METHODS



HANDLING OF CHEMICALS



NIGHT OPERATIONS

Figure 4.

- (5) Decontamination.
- (6) Destruction of materiel in the field.
- (7) Passive and active security measures.

15. FIELD TRAINING. This program is in the nature of a final examination for all personnel. It is divided into three main subjects—field depot operations, handling of toxic chemicals, and military training. As much of the period as possible is spent under actual field conditions. After completing this phase of training, the company should be a seasoned organization, capable of fulfilling its assigned mission.

16. TRAINING FOR CADRE. **a. Qualifications.** Two basic qualifications for cadremen are knowledge of subject matter and ability to teach it. A cadre school is instituted by the company commander as soon as the unit is activated, preferably before trainees arrive. The school continues permanently, although frequency of classes may be reduced upon completion of formal basic and technical training programs.

b. Subject matter. To learn depot operations, cadremen study and discuss subjects covered in pertinent manuals. Various cadremen are assigned to instruct the group on definite subjects. Special reference is made to:

ASF Manual SM 38-401	FM 10-5
ASF Manual M402	FM 10-10
ASF Manual M402-1	TM 3-220
Ordnance Safety Manual	TM 3-250
FM 3-15	TM 3-255
FM 9-25	TM 3-300

TM 10-230

c. Teaching. Methods of military instruction are outlined in FM 21-5 and TM 21-250. Methods outlined in these manuals are discussed at cadre schools. In addition, cadremen find it helpful to lay individual training problems before the group, thus profiting from advice of fellow instructors.

17. TRAINING FOR COMPANY HEADQUARTERS. This is facilitated if the company is not attached to a larger unit for personnel administration during training; since the company operates separately in the field, headquarters personnel benefit by experience in independent operations, and their adjustment to conditions in a theater of operations is thus simplified. Headquarters personnel learn all company functions, as they are the men to whom the commander looks most frequently for assistance. Their specific instruction includes:

a. First sergeant and company clerk learn company administration work at clerical school. Important references include TM 12-250, TM 12-252, and TM 12-255.

b. Supply sergeant is taught preparation of various supply forms including requisitions, shipping tickets, memorandum receipts, stock records, reports of survey, statements of charges, and inventories. He also learns appropriate tables of organization and equipment, tables of allowances, and other directives covering receipt, storage, and issue of company equipment. Clerical school provides an excellent background. Pertinent references include TM 10-310, TM 12-250, and TM 12-255, as well as current War Department supply policy circulars.

c. Mess sergeant and other mess personnel are trained in bakers and cooks school. They study TM 10-205, TM 10-405, and TM 10-411.

d. Motor sergeant and automobile mechanics are trained in motor schools. Many official publications are available for supplementary study, including technical manuals covering vehicles provided the company. Special attention is called to:

FM 25-10	TM 38-250
TM 9-2800	AR 850-5
TM 9-2810	AR 850-10
TM 10-460	AR 850-15
TM 21-300	AR 850-20

e. Chief clerk, general clerk, and stock record clerk are given instruction in depot accounting procedure, with emphasis on inventories and inspections, records and reports, and depot operations. They are sent to advanced

clerical school, if possible. Important references for further study include:

ASF Manual SM 38-401	FM 100-10
FM 3-15	TM 10-230
FM 100-5	TM 10-250
TM 38-403	

f. Chief storekeeper learns warehouse methods and procedures. Although practical experience provides the best instruction, he refers to the following publications:

ASF Manual M402	FM 5-35
ASF Manual M402-1	TM 10-230
Ordnance Safety Manual	TM 10-250

18. TRAINING FOR SERVICE PLATOONS. All members of each service platoon become familiar with depot service operations. In addition, administrative personnel must learn depot accounting procedures. Specific training includes:

a. Warehouse foremen and other warehouse personnel receive the same training as the chief storekeeper (par. 17f).

b. Clerical personnel are given the same training as clerical personnel in company headquarters (par. 17e).

c. Motor personnel are given the same training as motor personnel in company headquarters (par. 17d).

d. Toxic gas personnel are given field experience with toxic gases, including field filling, changing valves on ton containers, decontamination, and first aid for gas casualties. Valuable references include:

ASF Manual M402-1
Ordnance Safety Manual
FM 21-40
TM 3-250
TM 3-255
TM 3-300

e. Ammunition personnel are taught storage methods, with special reference to precautions in handling ammunition. Study of Ordnance Safety Manual is recommended.

Chapter 5

ESTABLISHMENT OF SUPPLY POINTS

Section I—RECONNAISSANCE AND SELECTION OF SITE

19. SELECTION OF SITE. Suitable sites vary with the climate, tactical situation, and mission. Forward supply points may be arranged on an entirely different basis than depots in the army service area, materiel being cached along the road instead of in a formal depot arrangement. The following basic considerations are always emphasized, however, by reconnaissance parties:

a. Convenience to using troop units is essential. The supply point is always near a good road net on which alternate routes are available, and, if possible, should be near a railroad.

b. Security is necessary for supplies and equipment. Forward supply points are in defilade (except in the tropics), but depots in the service area usually do not need defilade, since they are beyond the range of enemy artillery. All supply points are well removed from definite landmarks shown on maps, such as villages, prominent crossroads, and stream junctions. Natural concealment, or suitability for use of artificial camouflage materials, is a prerequisite.

c. Adequate storage space with room for expansion is essential.

d. Firm, high ground aids drainage and reduces the amount of dunnage needed. It also helps the company avoid muddy roads which would slow delivery of supplies.

e. Adequate water supply should be available.



20. ARRANGEMENT OF SITE. Although enough room for comfortable operation is necessary, the depot area is kept as compact as possible. Separate storage areas are established for ammunition, toxic gas, and inert supplies. Reconnaissance parties consider the following factors in arranging site:

a. Concealment of depot stocks is more important than concealment of personnel. Consequently, the area is laid out so that storage areas, rather than administrative installations, receive the best natural concealment. Concealment of new roads is also important; therefore, storage areas are located to make the greatest possible use of existing roads and to avoid creation of new roads and paths which would arouse suspicions of enemy aerial observers.

b. Prevailing winds are an important factor. Toxic gases are stored downwind from other parts of the installation, as are spontaneously and readily flammable materials.

c. Convenience requires that depot office and first aid station be located centrally, that salvage yard be near the general supply area, and that motor and equipment pools be nearest those installations they serve most frequently. (This arrangement is modified when forward supply points are established alongside a road.)

d. Expeditious service of incoming and outgoing supplies dictates that all roads be one-way to avoid traffic congestion. Another valuable installation for this purpose is an area set aside for filling routine requisitions. Supplies and equipment to be taken each night by supply trucks of using units are placed during the day at a point near the entrance or exit of the depot, facilitating their movement at night without interference from large incoming or outgoing supply trucking.

21. PRELIMINARY WORK AT SITE. Before the unit moves in, groundwork is laid for efficient and secure operation.

a. Security is provided by detailing a temporary force to protect the site from enemy action or sabotage. The

A GOOD DEPOT

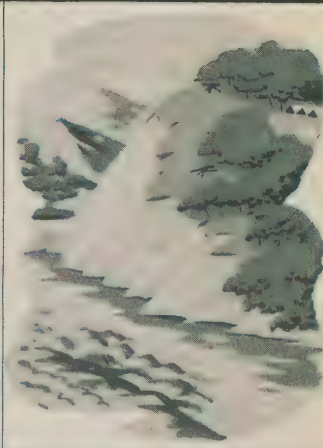
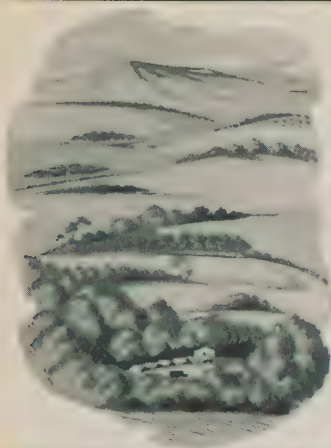


CONVENIENCE FOR TROOPS ROOM FOR EXPANSION



HIGH, FIRM GROUND CONCEALMENT

MUST PROVIDE:



ISOLATION FROM LANDMARKS

NATURAL DEFENSE POSITIONS



TOXIC GAS AREA DOWNWIND

SUITABLE BIVOUC FACILITIES

Figure 6.



Figure 7. Good arrangement of a depot site.

area is also inspected for booby traps, if located in territory recently controlled by the enemy.

b. Roads, all one-way, are laid out as required by location of the three main storage areas. The road network is marked with signs, prepared in advance, which are tacked on trees. Signs are also used to indicate limiting factors, such as weak bridges, steep grades, sharp curves, and fords. Types of surfaces and conditions of all roads are also indicated. If the area is to be occupied at night, reconnaissance personnel should place white markings (dry bleach or slurry) at the base of trees and other prominent landmarks along the route.

c. Paths are marked with twine, if possible. All available concealment is utilized in selecting paths. They are established well in advance to prevent haphazard paths which may be detected by enemy aerial observers.

d. Markers are placed to indicate the position of company headquarters and other installations.

e. Guides are appointed from among members of the reconnaissance party to direct each part of the convoy to its proper destination.

f. Movement schedules are prepared to prevent congestion when the area is being occupied. Key personnel and installations are moved first.

Section II—DEVELOPMENT OF THE DEPOT

22. CLASSES OF SUPPLY. Chemical warfare materiel is included in Classes II, IV, and V. Following are samples of each:

a. Class II supplies are authorized articles not included in Class IV, for which allowances are established by T/BA's, T/A's, and T/E's. They include inert materiel such as gas masks, gas alarms, collective protectors, and chemical weapons. (When of a critical nature, certain Class II supplies may be placed temporarily in Class IV.)

b. Class IV supplies are those for which allowances are

not prescribed, or which require special measures of control and are not otherwise classified. They include decontaminating materials and spare parts for chemical warfare materiel and equipment.

c. Class V supplies include ammunition and chemical warfare agents. (App. III) For safety and efficiency, Class V materiel is divided into four groups to facilitate dispersion in the depot area. These are:

- (1) *Group A*. Persistent gases.
- (2) *Group B*. Nonpersistent gases and smokes.
- (3) *Group C*. Spontaneously flammable materials.
- (4) *Group D*. Readily flammable materials (such as incendiaries and all types of chemical smokes when prepared as burning mixtures).

23. DIVISION OF SUPPLIES WITHIN DEPOT. **a. Safety considerations** require that various classes and groups of supplies be segregated. Classes II and IV are stored in the same general area, but 50 yards is left between each of the various groupings to minimize fire risk. Class V supplies are stored in two general areas, one for toxic gases and one for munitions. (App. III) These areas are 200 yards apart and both are at least 200 yards from the general storage area used for Class II and IV supplies.

b. Efficiency is another factor dictating the grouping of Class II and Class IV supplies in a common area. These supplies are received and issued at a relatively constant rate, but the rate of consumption for Class V supplies depends entirely on operational factors and contemplated operations. Receipt, rate of issue, and supply levels of Class V supplies vary widely.

24. METHODS OF STORAGE. These include use of warehouses, magazines, and open storage, but open storage is used most frequently.

a. Warehouses are desirable for inert materiel such as chemical mortars and protective supplies. Existing buildings can frequently be adapted or prefabricated warehouses can be erected.

b. Magazines are highly desirable for ammunition, but

**KEEP AREAS 200 YARDS APART
GROUPING WITHIN AREAS 50 YARDS**

**GENERAL STORAGE AREA
(CLASS II & IV SUPPLIES)**

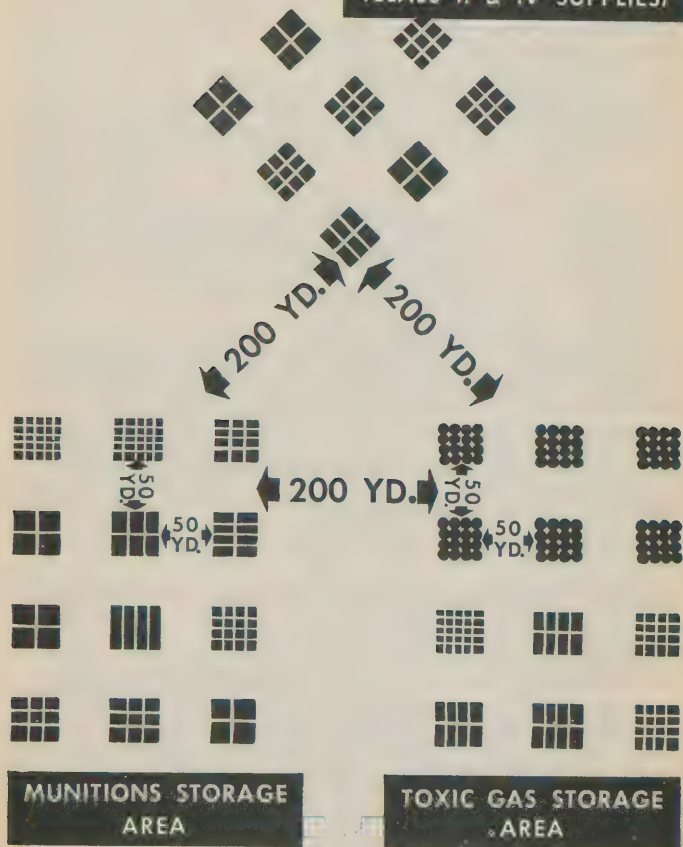


Figure 8. Space factors in arrangement of depot site.

are seldom available in a theater of operations. Prefabricated hutments may be arranged. Buildings used as magazines are kept cool and dry, and are protected from the sun. If the temperature inside exceeds 100 degrees Fahrenheit for more than 24 hours, the building is wetted down outside. Other considerations are:

(1) Substances which can explode one another, such as detonators and high explosives, are never stored in the same magazine.

(2) A separate magazine is provided for propelling charges, a second for fuzes, and a third for burster tubes.

(3) Magazines containing explosives are never located near buildings containing filled chemical shell.

c. Open storage is used if the situation prohibits use of buildings. Tarpaulins are placed over materiel to protect it from rain and direct rays of the sun. Dunnage is placed under stacks. As a general rule, open storage is used for materiel not affected by weather.

25. STACKING. General principles followed in stacking are outlined in ASF Manual M402. The following considerations receive special attention in field operations:

a. Manpower and equipment are limiting factors in determining height of stacks. Stacks are never piled higher than men can handle conveniently, unless fork-lift trucks are available.

b. Identifying labels, including lot numbers, are always visible.

c. Main aisles are continuous, in order that handling equipment can move rapidly and supplies can flow in a straight line.

d. Cross aisles are kept as wide as main aisles; otherwise it is difficult to work in them.

e. Storage direction is from back of each space to aisle. Where deep sections are accessible from several directions, direction of storage is forward from a center line.

f. Small-lot storage areas are set apart from areas holding large quantities of supplies.

g. Dunnage is used at bottom of stacks in order that bottom tiers do not touch ground. This keeps materiel dry.

STACKING IS AN EXACT SCIENCE

Don't stack higher than a man can handle conveniently

Keep identifying labels visible

Camouflage uniform stacks to prevent spotting from air

Store from back of space to aisle

Figure 9.



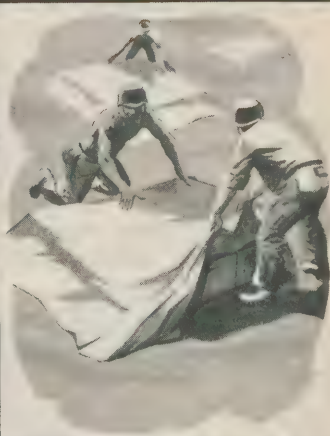
Use "home-made" rocks to conceal supplies in stony areas



Keep bulk chemicals away from direct rays of sun



Store bulk chemicals downwind of friendly troops



In open area, keep stacks low to avoid shadows

h. Air circulation is important; stacks are never made so large that free circulation is prohibited.

i. Uniform stacks are space savers, but in open storage they are spotted by aerial observation unless even contours are cut down by camouflage.

26. SPECIAL CLIMATIC STORAGE PROBLEMS. Tropical areas, deserts, and extremely cold climates present special depot storage problems.

a. Tropical areas usually provide lush vegetation for easy concealment, but this advantage is offset by heat, humidity, and excessive rainfall. Supplies are normally stored in high positions and on dunnage, preventing contact with water. Dunnage or pallets are used between layers of boxes when supplies are stacked, since this gives better circulation of air. Because concealment is good and because roads are difficult to build through the jungle, depot installations are more compact than those in temperate climates.

b. Deserts provide little or no natural concealment, therefore the best protection from enemy observation is dispersion over a large area—possibly as much as 6 square miles. Both ammunition and bulk chemicals are affected by excessive heat, and must therefore be protected by tarpaulins from direct rays of the sun. Prevailing winds are highly important in determining location of a toxic gas yard, since particles of sand contaminated with mustard gas can be carried a great distance during a sand storm. Special attention is called to the following points with respect to concealment in the desert:

(1) Many small, isolated stacks make unattractive bombing targets, as compared with a few big stacks close together.

(2) Stacks are built in pyramidal shape, and very low. They are covered with tarpaulins, and sand is placed on top.

(3) Stone-littered areas are valuable; supplies may be grouped in low, irregular stacks, surrounded by and covered with artificial rocks made of heavy wire, covered with burlap and mud.

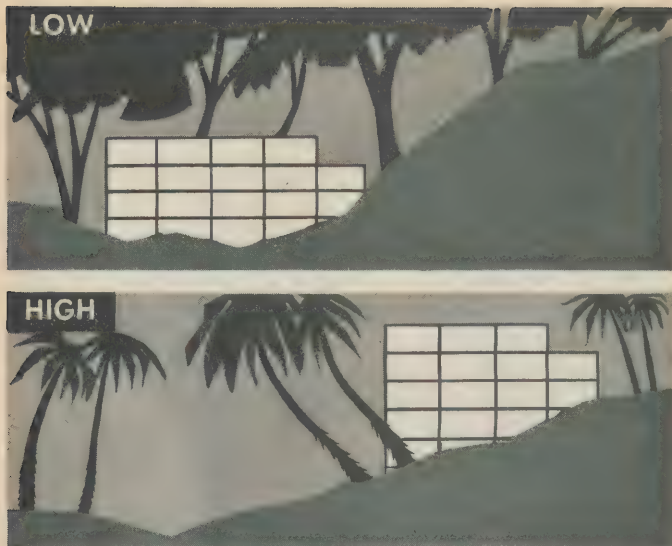


Figure 11. Always occupy low positions for security, except in the tropics, where high positions are needed to keep supplies dry.

c. Arctic areas present difficult camouflage problems; therefore depot areas are dispersed over a wide area in much the same manner as in desert installations. Dunnage is used to keep supplies off the ground, and stacks are kept low. They are covered with canvas, but with sufficient clearance underneath to permit ventilation. Snow is not allowed to accumulate on stacks. Supplies affected by extreme cold are stored indoors or protected by windbreaks.

27. CONCEALMENT. **a. Reference** is made to appropriate manuals and training films. Manuals include FM 5-21, TM 5-267, and TM 5-269. Training films include TF 5-646, TF 5-648, and TF 5-649.



Figure 12. Disperse supplies in open country to make them unprofitable bombing targets. Concentrations invite aerial attack.

b. Problems of concealment for the depot company ordinarily fall into four categories; namely, concealment of stock, roads, security measures, and bivouac areas. The last three problems are covered thoroughly in Corps of Engineers manuals and training films listed above. Special suggestions for concealment of stock include:

(1) *Camouflage nets* may be suspended over stacks, leaving enough room underneath for unhampered operations. Garnishing on nets must conform to natural vegetation.

(2) *Pits* may be dug for materiel not affected by moisture, excavations being camouflaged.

(3) *Hillsides* may sometimes be excavated, or may contain natural caves suitable for improvised warehouses. Entrances are always covered with camouflage materials.

(4) *Disguises* may be used for stacks, such as refuse heaps, woodpiles, and haystacks; or gaps may be cut in hedgerows or stone walls. Gaps are filled in with supplies and then camouflaged with natural materials from the original hedgerow or wall. Disguises are especially helpful in concealing stock placed at roadsides in forward supply points.

c. Responsibility for protective concealment of the depot rests upon the company commander. He is provided in the administrative platoon with a general camouflage mechanic whose full time is devoted to this task.

28. STORAGE OF CHEMICAL SUPPLIES. **a. Instructions** regarding storage and handling of Class V supplies are provided in TM 3-250. Instructions for Class II and Class IV supplies are given in technical manuals covering the various items concerned.

b. Logistical planning is highly important. Logistical data regarding items of chemical warfare materiel are given in WD SB 3-50. Logistical data for storage and shipment of all items, including loading charts for trucks, may be prepared from these bulletins.

Chapter 6

OPERATING PROCEDURES

Section I—INTRODUCTION

29. STOCK. a. **Initial stock** is supplies received, or to be received as soon as the depot is established. Classes and quantities are determined by higher authority and may depend on anticipated requirements, although quantities are usually based on amounts for each using unit as specified in Army Service Forces Catalogs CW4-1 and CW4-2, and in T/O's, T/E's, and T/O & E's of the "3" series.

b. **Balanced stock** is the accumulation of supplies of all classes to meet requirements for a fixed period as determined by higher authority.

c. **Stock levels** are maximum and minimum quantities carried by a depot at any given time. For example, an army chemical depot may be authorized to carry between 4,000 and 10,000 service gas masks; the maximum *should not* be exceeded, and the minimum *must* be maintained because it is a predetermined safety margin.

30. MAINTENANCE OF STOCK LEVELS. Two methods are followed:

a. **Supply by request** is most common with chemical depots. Under this plan, supplies are obtained only when requested by the depot's chemical supply officer in his daily telegram or through requisition. The supply officer concerns himself chiefly with the lower level of

his stock; this level is maintained either by requisition or purchase.

b. Automatic supply systems are seldom used by chemical depots. Under this plan, the supply officer sometimes has to requisition additional supplies when the lower level is approached. When the maximum level is approached, he may have to request that specific items be excluded from automatic flow for a designated period. Automatic flow is used most frequently for expendable supplies and articles which have a uniform daily consumption similar to the consumption of Class I supplies.

31. DISPLACEMENTS OF THE DEPOT. In maintaining stock levels, the depot supply officer keeps a running record of issues, receipts, and balances for all items on hand. In the event of forward or retrograde displacement, he can determine quickly and accurately what nonorganic transportation is needed.

a. Forward displacements. Supplies coming to the depot for storage rather than immediate issue sometimes can be slowed down temporarily until the new supply point is opened. If this is not possible, such supplies may frequently be routed to the new site where an advance detail is organized to open the new supply point. In either case, every effort is made to reduce stock in advance, to permit movement of the depot with a minimum of effort and time.

b. Retrograde displacements. The following fundamental rules are observed:

(1) Movement of supplies and service units is not allowed to interfere with movement of combat units.

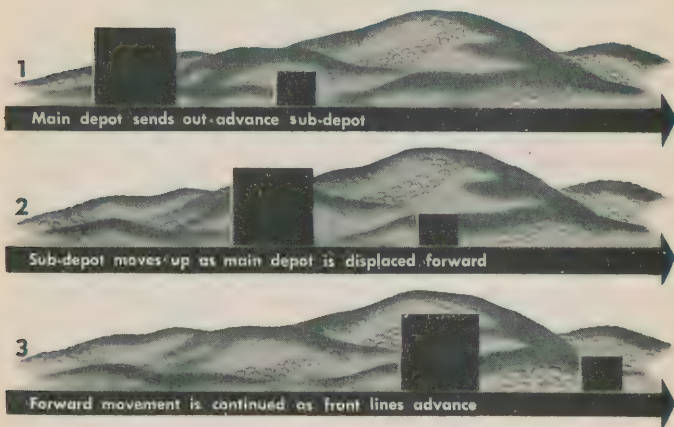
(2) Forward movement of supplies is reduced to the minimum, consistent with adequate supply of essential materiel to troops.

(3) Supplies moved to the rear, augmented by additional supplies which must be brought forward, are dumped at successive positions in quantities adequate to serve troops in each position.

(4) Supplies which must be abandoned are destroyed, following directions in pertinent technical manuals.

FORWARD AND RETROGRADE DISPLACEMENTS

Supply line going **FORWARD**



RETROGRADE Supply looks like this

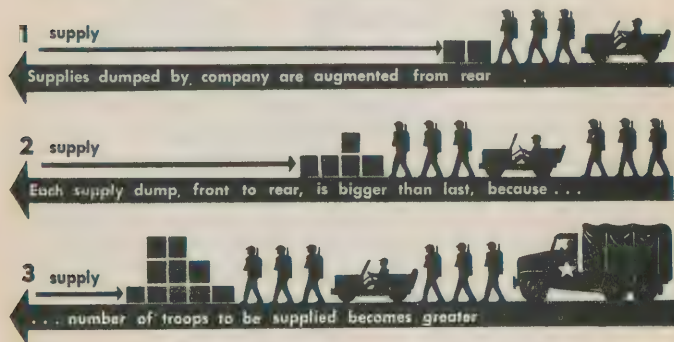


Figure 13.

Section II—ADMINISTRATIVE OPERATIONS

32. PROPERTY ACCOUNTING. a. **Simplicity** is extremely important in handling property accounts. The system is always kept as simple as is consistent with maintaining records of stock on hand, delivering supplies promptly, and providing protection against loss and theft. If the company is operating in an army service area, its record system normally consists merely of receipting incoming shipments and tallying them out to units it serves. If operating in the zone of communications, a more formal system is used. *Although the company normally operates in an army service area, and therefore uses a simplified system, information covering more formal methods is given below in order that personnel concerned may know how to handle more detailed procedures.*

b. **References** for personnel concerned with accounting in the theater of operations include:

FM 100-10

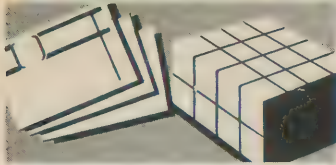
AR 35-6640

AR 35-6520

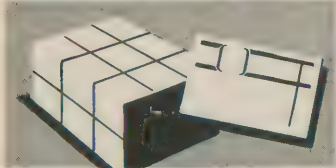
AR 35-6660

33. ROUTINE FOR INCOMING SHIPMENTS. Three copies of shipping document are received normally with each incoming shipment. Shipment is checked against information copy of document at warehouse or other storage point by stock clerk checkers. If shipment checks, information copy is initialed by checker and turned over to record section. Here it is compared with the other two copies. One copy, signed by chemical supply officer, becomes depot's *debit voucher*, and is placed in debit voucher file after being given a number. All necessary data is entered in voucher register and on stock record cards. (TM 10-310) (Full information on War Department Shipping Document, WD, AGO Form No. 450-5-B and No. 450-5-C, is found in SM 38-401 and TM 38-403.)

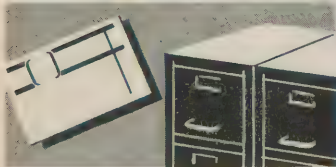
ROUTINE FOR INCOMING SHIPMENTS



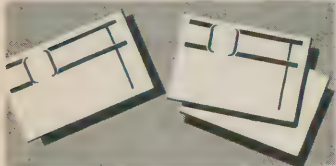
- 1** 3 COPIES OF SHIPPING DOCUMENT RECEIVED WITH SHIPMENT



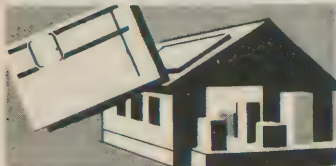
- 2** SHIPMENT CHECKED AGAINST INFORMATION COPY OF DOCUMENT AT STORAGE POINT



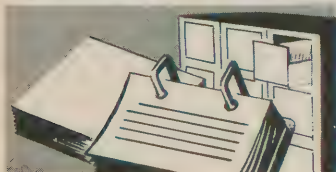
- 3** INFORMATION COPY INITIALED BY CHECKER AND TURNED OVER TO RECORD SECTION



- 4** COMPARED WITH OTHER TWO COPIES



- 5** ONE COPY GETS NUMBER AND BECOMES DEPOT'S DEBIT VOUCHER



- 6** ALL NECESSARY DATA ENTERED IN VOUCHER REGISTER AND ON STOCK RECORD CARDS

Figure 14.

ROUTINE FOR OUTGOING SHIPMENTS



1

REQUISITION IS CHECKED AGAINST STOCK ON HAND.



2

SHIPPING DOCUMENT IS MADE UP.



3

INFORMATION COPY OF SHIPPING DOCUMENT IS SENT TO STORAGE AREA, SERVING AS ORDER TO MAKE SHIPMENT; COPY INITIALED AND RETURNED TO DEPOT OFFICE.



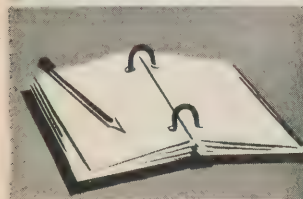
4

ANOTHER INFORMATION COPY OF SHIPPING DOCUMENT IS SENT TO TRANSPORTATION OFFICE FOR PREPARATION OF BILL OF LADING. (ARMY TRANSPORTATION PERSONNEL MAY ALSO REQUIRE COPY IF ASKED TO ALLOCATE VEHICLES FOR LARGE SHIPMENT.)



5

COPY OF BILL OF LADING, SHOWING COST OF SHIPMENT, IS FORWARDED BY TRANSPORTATION OFFICE TO CHEMICAL SUPPLY OFFICER, WHO HAS COST POSTED TO PROCUREMENT AUTHORITY FILE.



6

ITEMS SHIPPED ARE ENTERED ON STOCK RECORD CARDS.

34. ROUTINE FOR OUTGOING SHIPMENTS. a. **Receipt of requisition.** When requisition is received, it is edited and quantities to be shipped are entered in "approved" column of requisition. It is then turned over to chief clerk, or one of chief record clerks, who has it checked against stock record cards to make certain sufficient quantities of approved items are on hand to fill request.

b. **Shipment.** Shipping document is made up, and an information copy is sent to storage area. There it serves as an order to fill requisition. After shipment, this copy is signed at depot area and returned to office. Where large shipments are involved, another information copy is sent to personnel in charge of transportation, who determine and allocate required transportation. This copy is also returned to depot office.

c. **Post-shipment routine.** Items being shipped are entered on stock record cards as soon as shipping document has been completed. Bill of lading is prepared at transportation office based on information given on shipping document. Transportation office enters cost of shipment on one copy of bill of lading, and forwards this copy to chemical supply officer. Cost of shipment is posted to procurement authority file by record section, and a copy of the bill of lading is then placed in bill of lading file. Bills of lading are discussed in ASF Manual M404.

35. FILING ROUTINE. a. **File folders** are maintained for requisitions, vouchers, correspondence, procurement authorities, and bills of lading. Incoming requisitions are filed in one of two folders, depending on the action taken:

(1) *Back order file* is the folder for requisitions when none or part of the requisition is filled. Under standing operating procedure, this file is checked weekly to determine whether any or all of the unfilled requisitions can be filled. Shipment is automatic after each weekly check.

(2) *Requisition file* is the folder used for requisitions completely filled.

b. **Register sheets** are placed in the front of each folder,

listing papers contained therein. If a paper is removed or transferred to another file, proper notation is made on the register.

c. Numbering of vouchers begins each 1 July, at the start of the fiscal year. A voucher number may consist of several parts, the numbering system being designed by the chemical supply officer:

(1) Letter "C" or "D" indicates credit or debit voucher.

(2) Voucher number, e.g., C-5, indicates the fifth credit voucher of the current fiscal year.

(3) Fiscal year, e.g., C-5-44, indicates the fifth credit voucher of the fiscal year 1944.

(4) Identification of the item, e.g., C-5-44-DGM, might indicate the fifth credit voucher for the fiscal year 1944 covering diaphragm gas masks. The element of identification is optional with each supply officer. Abbreviations used in the Chemical Warfare Service supply catalog may be helpful in devising a code.

d. Cross-reference routine is carried out after a shipment is completed. Three main cross-references are made:

(1) Shipping document number and date are entered on the requisition to which they apply.

(2) Requisition number is entered on the shipping document.

(3) Stock record card is automatically cross-referenced when the shipping ticket is posted.

Section III—RECEPTION AND ISSUE

36. INTRODUCTION. Details of reception, storage, and issue are discussed in ASF Manual M402. Personnel concerned with this work are urged to use that publication as a guide. Procedures for servicing supplies vary greatly, depending on such factors as size and location of the installation, types of supplies handled, extent of ware-

housing facilities available, and amount of warehouse machinery used. The following discussion is limited largely to *principles* applying to depot operations in general. *Methods used at supply installations in the communications zone are naturally modified in forward areas where fewer facilities are available.*

37. HANDLING OF MATERIEL. Efficient depot operation requires the greatest possible conservation of labor, time, and space consistent with safety of men and materiel. Certain clearly defined factors are involved:

a. Balanced operation involves the right number of men for the job. One man too few or too many throws the operation off balance.

b. Straight line flow of materiel between vehicle and stack conserves time and energy.

c. Mechanical equipment is never used indiscriminately merely because it is available. Excessively bulky and unwieldy equipment may actually slow down the operation. Small and efficient mechanical storage equipment, such as fork-lift trucks, is valuable for moving boxed materiel. Boom trucks and crane tractors are seldom used for such purposes, but are essential in moving large containers of war gases.

d. Handling units are kept at a minimum by reducing the number of small units and concentrating small packages into large units.

e. Gravity can often be substituted for manual labor or machinery by using chutes, conveyors, or slides.

f. Idle time for men and machines is avoided. If temporarily not needed at their assigned task, they are switched elsewhere to help keep the depot functioning efficiently.

g. Standing operating procedure for handling each particular type of recurring job simplifies and speeds operations.

h. Maintenance of handling equipment increases its usefulness, lengthens its life, and insures against lack of equipment when most vitally needed.

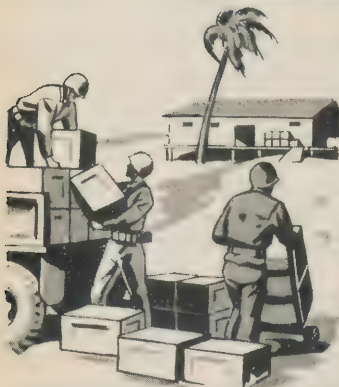
DO IT THE QUICKEST,

WRONG RIGHT



BALANCE YOUR OPERATIONS

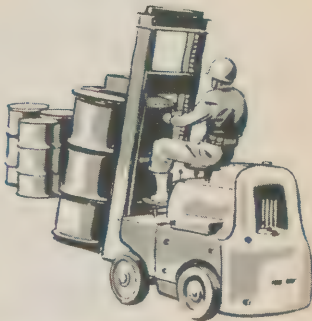
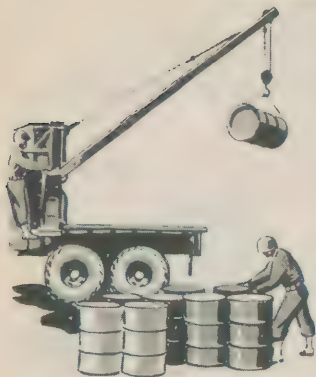
WRONG RIGHT



UNLOAD AT STACKING SITE

EASIEST WAY:

WRONG RIGHT



USE MECHANICAL EQUIPMENT DISCRIMINATELY

WRONG RIGHT



USE GRAVITY WHERE POSSIBLE

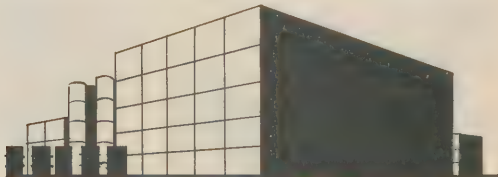
Figure 16.

COMMODITY FACTOR INVOLVES:



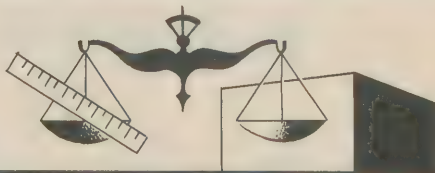
ACTIVITY

Supplies moving out at even rate, or going out soon, are stored near shipping point.



QUANTITY

More storage space is provided for items used in greatest quantity.



SIZE, WEIGHT, & SHAPE

Store large, heavy items where minimum handling is necessary.



NATURE OF MATERIAL

Segregate supplies according to classes, and their reaction on one another.

38. EFFICIENT USE OF SPACE. a. **Distribution** of space is a threefold process consisting of:

- (1) Its allocation to the depot by higher authority.
- (2) Its assignment within the depot area for storage of certain classes of supplies.
- (3) Its division within assigned storage areas into sections for storage of definite commodities.

Actual storage space is limited, because room is reserved for packing, crating, assembling, inspecting, and handling supplies. Personnel in charge devise layouts within the assigned space limitations to store and handle the most supplies with the least labor and time. Two major considerations in layout of space are the *commodity factor* and the *capacity factor*.

b. Commodity factor involves:

- (1) *Activity*. Supplies moving daily at a fairly even rate or going out in a short time, are stored near the shipping point. Many Class II supplies fall into this category.

- (2) *Quantity*. Reference to files in the administration office indicates items of supply used in greatest quantity. Storage space for those items is allocated accordingly, more room being provided for them than for items kept at low stock levels.

- (3) *Size, weight, and shape*. Large and heavy containers are stored outdoors or immediately inside warehouse doors to reduce handling.

- (4) *Nature of materiel*. This element is discussed in paragraph 23. Supplies in a chemical depot are segregated according to classes and with reference to their effect on one another.

c. Capacity factor involves:

- (1) *Aisles*. Wide aisles speed handling of supplies, but they also consume space and are never used where narrow aisles do as well.

- (2) *Storage by space*. Big lots are packed in big spaces and small lots filled in around the edges in short rows. Supplies are not stored according to stock-number sequence.

- (3) *Record of space layouts*. All personnel responsible

for use of space must know exactly which areas are available for new storage. Efficiently kept space-layout records save time, labor, equipment, and storage space.

(4) *Unused space.* Space for incoming supplies is retained in large blocks. Ten small blocks do not take the place of one large block.

(5) *Redistribution of space.* If rising stock levels cause an overflow of supplies at one point, or if falling stock levels open up space at another, space is redistributed as needed. Such changes are seldom made when large supplies must be shifted. Advantages of any shift are weighed against labor and time involved.

39. REGULATIONS GOVERNING SHIPMENT. Interstate Commerce Commission regulations govern shipping chemical warfare equipment and supplies in the zone of interior. These publications and all changes thereto will be obtained by every depot company. In the theater of operations, it is the duty of the theater commander to establish rules and regulations governing shipment of supplies in the communications zone and combat zone.

40. INSPECTIONS. Two general types of inspection are performed by depot personnel:

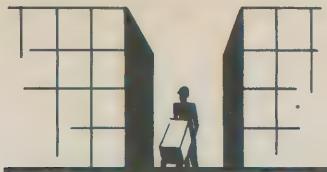
a. **Daily inspection** of all supplies at ammunition dumps, toxic gas yards, and warehouses or other storage points. This inspection is conducted to protect property.

b. **Inspection of salvaged property**, conducted when necessary, in conjunction with personnel of the chemical maintenance company.

41. SALVAGE. a. **General procedure.** Salvaged Chemical Warfare Service materiel is usually sorted at collecting points. Items suitable for immediate reissue are sent to supply points for redistribution. Items not returned for reissue are evacuated to depots in the army service area or communications zone, usually through railheads or truckheads. Here the materiel is reclaimed and placed in depots for issue, or is otherwise disposed of. Specimens

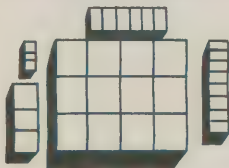
CAPACITY FACTOR INVOLVES:

AISES



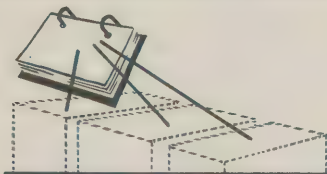
Use narrow aisles where possible. (But width is determined by size of handling equipment.)

STORAGE BY SPACE



Big lots in big spaces; small lots around edges in short rows.

RECORD OF SPACE LAYOUTS



Keep efficient space-layout records.

UNUSED SPACE



Leave new storage space in large blocks.

REDISTRIBUTION OF SPACE



Redistribute stock according to rising and falling stock levels.

Figure 18.

of new enemy equipment are turned over to intelligence. Other enemy equipment is reclaimed and placed in depots for issue, or is disposed of in accordance with existing instructions.

b. Depot company's salvage functions. Maintenance company personnel are charged with reclaiming salvaged materiel, but depot and maintenance personnel often work together in salvage operations. Although no salvage personnel are provided in the depot company, much salvaged property flows from the combat zone both to the maintenance and the depot companies. Depot personnel, therefore, are trained to handle it.

42. FILLING OPERATIONS. Most chemical munitions are arsenal-filled, principal exceptions being airplane smoke tanks, flame throwers, and chemical land mines. Airplane smoke tanks are normally filled by chemical air operations personnel, but chemical depot companies may at times be called upon for this work. Instructions for field filling of chemical munitions are given in TM 3-250, TM 3-255, TM 3-300, TM 3-315, TM 3-375, and TM 3-376A.



Figure 19. Passive defense is nine-tenths concealment. If the enemy approaches, duck and freeze.

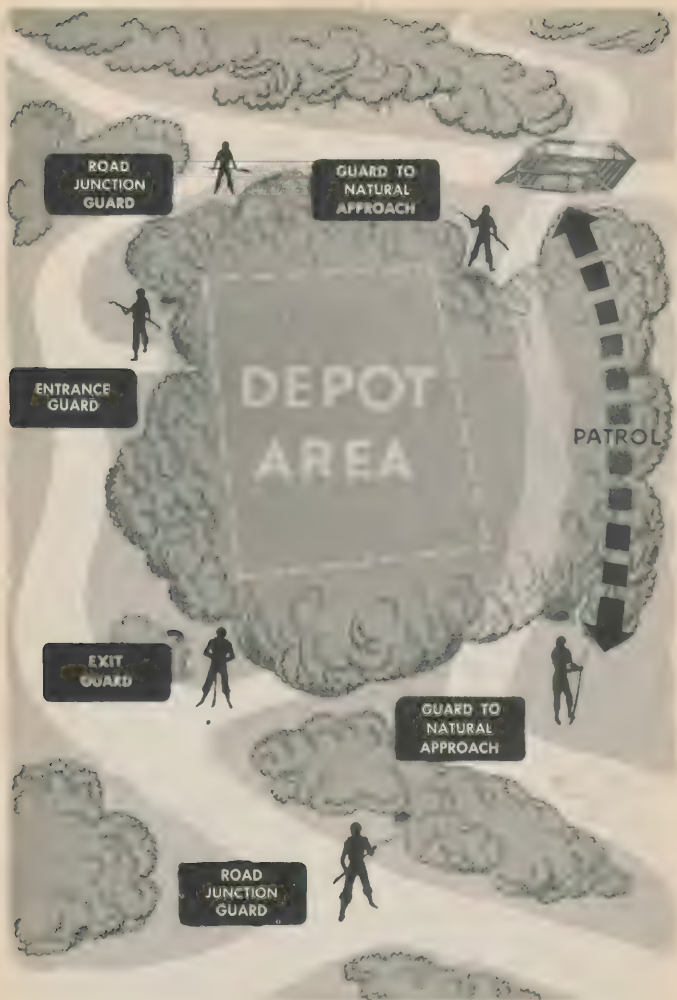


Figure 20. 24-hour outpost guard system: each guard has concealed fox hole and means of communication with depot.

Chapter 7

SECURITY.

43. INTRODUCTION. Security is a command responsibility. The commanding officer provides and maintains protection from enemy action for his command and for the supply system he operates. This requires careful planning and continuous training. Passive security is of greatest importance, since the company is not assigned weapons for full scale defense. If needed, reserve troops from army headquarters are normally available for support.

44. PASSIVE SECURITY. This consists principally of maintaining adequate camouflage. Attention to concealment begins with selection of the supply point and continues until the site has been evacuated. Concealment is discussed fully in paragraphs 26 and 27. In addition, emphasis is placed on the following points:

- a. **Changes** in the supply point or surrounding area which might be noticed on photos made by enemy aerial observers are corrected immediately.

- b. **New roads and trails** are kept at a minimum.

- c. **Cutting of vegetation** is prohibited unless vital to operation of the depot.

45. ACTIVE SECURITY. a. **Guards** are stationed at outpost positions to cover road junctions and natural approaches on all sides of the installation. They maintain a 24-hour watch and are equipped with means of communication to warn the depot of mechanized or paratroop attack. Similarly, internal guards maintain a 24-hour watch within the depot area.

PERIMETER PLAN FOR ACTIVE DEFENSE

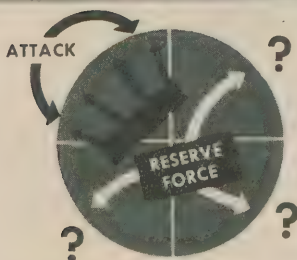


Figure 21. Area is divided into four defense zones, each with prepared defensive positions. SOP is prepared to cover attack from any direction. Reserve force is always held back to repel attack from another source.

b. Perimeter defense plans are drawn up and used as standing operating procedure. Fox holes and prepared defensive positions are constructed on all sides of the installation. Machine guns are emplaced and a communications system is established. The area is next divided into a series of defensive zones, and each member of the company is assigned a definite position in each zone. Thus the organization is prepared to defend itself against attack from any direction. In case of a mechanized or paratroop attack, the zone facing the point of strongest attack is occupied, while a reserve force is held back to be sent where needed as the situation develops.

c. Mines may be laid out in certain natural approaches. These stop an attack temporarily and warn the company. Two types of mines may be used—high explosive booby traps and chemical mines filled with smoke. FM 5-30 explains methods of preparing the mines.

46. DEMOLITION OF SUPPLIES. In a retrograde movement, supplies which cannot be evacuated are destroyed. Procedures are given in technical manuals covering each item of chemical warfare equipment. Depot personnel become thoroughly familiar with these procedures to facilitate demolition if it should become necessary.



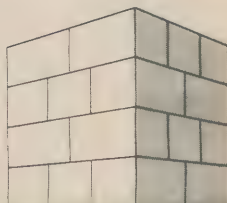
BLOCK



COLUMN



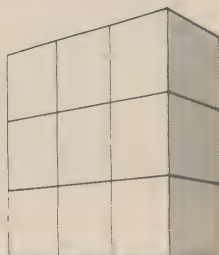
COURSE



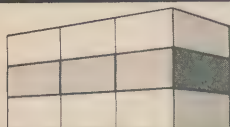
CROSS STACKING



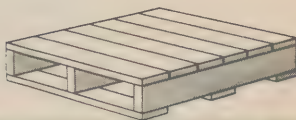
DUNNAGE



STACK



TIER



PALLET

Figure 22. Warehouse terminology illustrated.

APPENDIX I

GLOSSARY

1. **ACCOUNTABILITY.** This devolves upon any person to whom public property is entrusted, and who is required to maintain property record thereof. Record is checked by an inspecting officer.
2. **AISLE.** Passageway along which supplies and equipment may be moved.
3. **ASSIGNMENT OF SPACE.** Designation of space at specific location for storage of particular class of supplies.
4. **AUTOMATIC SUPPLY.** Movement, without specific requisition, of certain kinds and quantities of supplies in accordance with predetermined schedule.
5. **BALANCED STOCK.** Accumulation of supplies of all classes in quantities determined necessary to meet requirements for fixed period.
6. **BILL OF LADING.** Acknowledgment of receipt of specified freight by transportation company, and contract for its delivery to consignee.
7. **BLOCK.** Self-supporting, regular pile of supplies, 2 or more units wide, 2 or more deep, and 2 or more high. Block may be either rectangular or pyramidal.
8. **BOX PALLET.** Pallet on which skeleton, box-shaped framework has been constructed, in order that, when several pallets are stacked, weight of upper pallets rests on frames rather than on supplies held on lower pallets.

- 9. BULK STOCK.** Supplies in original containers.
- 10. CALL.** Demand for delivery of supplies covered by credits.
- 11. CAR PLATE.** Plate, usually of steel, used to bridge space between freight car and loading platform.
- 12. CARRIER.** Any vehicle used to transport supplies.
- 13. CHECK SHEET.** Form used by warehouse checkers to record quantity of items in a shipment.
- 14. CHECKER.** Warehouse employee who counts and records items in a shipment.
- 15. CLEARING SPACE.** Area commonly used for assembling outgoing shipments and, occasionally, for tagging, marking, and packing.
- 16. COLUMN.** Vertical, self-supporting, regular pile of supplies 1 unit wide, 1 deep, and 2 or more high.
- 17. CONSIGNOR.** Supply or property officer who ships supplies to another.
- 18. CONSIGNEE.** Supply, property, or other officer to whom supplies are sent.
- 19. CONSOLIDATING POINT.** Point at which less-than-carload or less-than-truckload shipments are brought together for reforwarding as truckload or carload.
- 20. CONTROL POINT.** Agency established by unit at any convenient point on route of its trains, where information and instructions are given to regulate supply or traffic.
- 21. COURSE.** Horizontal layer in block of supplies.

22. CREDIT. Allocation of definite quantity of supplies placed at disposal of organizational commander for prescribed period.

23. CROSS STACKING. Placing one layer of containers at right angles to those just below to increase stability of stack.

24. CROSS TYING. Crossing layers of supplies as in cross stacking, but in cross tying only an occasional layer is crossed.

25. DAILY TELEGRAM. Telegram or other message dispatched daily by divisions and large units giving unit's situation relative to supplies. Strength report is included. Telegram is basis on which supplies to be forwarded are computed.

26. DAILY TRAIN. Train arriving daily at railhead with supplies for troops served by railhead.

27. DAY OF SUPPLY. Estimated average expenditure of various items of supply per day in campaign, expressed in quantities of specific items or in pounds per man per day.

28. DISTRIBUTING POINT. Place, other than depot or railhead, where supplies are issued to regiments and smaller units. Distributing points are designated by class of supplies therein, and by identity of unit establishing them.

29. DUMP. Temporary stock of supplies established by corps, division, or smaller unit.

30. DUNNAGE. Material, generally lumber, laid on floor or ground under a pile of supplies to keep them from contact with surface, or placed between layers of a pile to provide ventilation.

31. EXCESS STOCK. Stock beyond that required for local needs.

32. EXPENDABLE PROPERTY. Property consumed in use, or which loses its identity upon being made part of a major item. Such property is picked up on stock record of depot, but not on stock record or property book of final recipient.

33. GROSS WEIGHT. Weight of container plus its contents.

34. HARD-STANDING. Open storage with all-weather surface.

35. INVENTORY. Detailed account, catalog, or schedule of items of supply.

36. K. D. Knocked down, indicating an article partially or entirely taken apart.

37. LOCATOR SYSTEM. Record showing exact location of supplies stored within depot.

38. LOT. Quantity of materiel, all of which was manufactured under identical conditions, or quantity of supplies of same general classification received and stored at any one time.

39. LTL. Less-than-truckload, indicating shipment not large enough to fill truck.

40. MAGAZINE. Building, above ground, constructed for exclusive storage of ammunition and explosives.

41. NOMENCLATURE. Exact name and description of an item as listed in Federal Standard Stock Catalog or other lists of supplies.

42. NONEXPENDABLE PROPERTY. Property which does not lose its identity in use, and for which the person to whom it is entrusted remains accountable.

43. PALLET. Small platform upon which containers are loaded in order that they may be handled as a unit.

44. PROPERTY RECORDS. Record consisting of:

a. Stock record account. Series of stock record sheets set up for each item of property or component parts thereof, showing date, voucher number, amount received, amount shipped, and balance on hand.

b. Voucher register. An indexed file of vouchers which serves as authority for increasing or decreasing stock on hand. They are numbered serially, beginning with number one the first day of each fiscal year and continuing until last day of fiscal year.

c. General account of property on memorandum receipt. Certain types of supplies are issued on loan basis only, such as T/A equipment. When property is loaned, issuing officer is still held accountable, but receiving officer signs memorandum receipt for property and thereby assumes responsibility.

45. RAILHEAD (OR TRUCKHEAD). Supply point where loads are transferred from one type of carrier to another.

46. REGULATING STATION. Point established on lines of communication through which commander of theater of operations controls and directs movements of supplies.

47. REQUISITION. Request for supplies, usually on form furnished for this purpose. (App. II) The word is also used to signify purchase by demand of supplies in occupied territory.

48. RESPONSIBILITY. All persons holding public property in their possession are responsible for it whether or not they have signed receipt.

- 49. SECTION.** Area in warehouse extending from one wall to the next; usually largest subdivision of one floor.
- 50. SHIPPING DOCUMENT.** Form authorizing warehouse personnel to ship government property. It also serves as voucher. (App. II)
- 51. SPOT.** To place truck or boxcar where required for loading or unloading.
- 52. STACK.** Self-supporting, regular pile, 2 or more units wide, 1 or more deep, and 2 or more high.
- 53. STOCK RECORD CARD.** Form on which accountable officer keeps record of property on hand, received, and issued.
- 54. SUPPLY POINT.** Depot, railhead, dump, or distributing point.
- 55. TABLES OF ALLOWANCES (T/A).** Lists of property for use at posts, camps, or stations. This property is not taken when organization moves into field.
- 56. TABLES OF EQUIPMENT (T/E).** Lists of property authorized for issue to organizations and carried by them on stock record or property book. T/E property is carried by organization at all times, regardless of where it moves.
- 57. TABLES OF ORGANIZATION (T/O).** Lists published for each type of army organization, showing authorized strength of officer and enlisted personnel by rank and grade, also certain authorized equipment such as weapons, motor transportation, and special service equipment.
- 58. TABLES OF ORGANIZATION AND EQUIPMENT (T/O & E).** Combined T/O's and T/E's.

- 59. TALLY-IN.** Form for recording incoming shipments.
- 60. TALLY-OUT.** Form for recording outgoing shipments.
- 61. TARE.** Weight of container or vehicle when empty.
- 62. TIER.** Horizontal layer of column, row, or stack. Tiers are numbered in order of stowing, from bottom up.
- 63. TRAIN.** That portion of organization's transportation, including personnel, which operates primarily for supply and is under immediate orders of organization commander.
- 64. TURN-OVER.** Rate at which particular item of supply is requisitioned from depot.
- 65. VOUCHERS.** Forms on which are listed transfers, gains, or losses of property by an accountable officer. They may be:
- a. Debit vouchers**—any forms or papers listing property received or gained for stock.
 - b. Credit vouchers**—any forms or papers listing property dropped or lost from stock.
- 66. VOUCHER REGISTER.** See property records (44, above).

APPENDIX II

BLANK FORMS

To insure uniformity and standard methods, all arms and services are required to use forms prescribed in AR 35-6720. Following is a list of basic blank forms and a brief description of each.

INVENTORY ADJUSTMENT REPORT (WD, QMC Form No. 486). Used to adjust stock record balances with balances of property actually on hand, as determined by inventory.

INVENTORY AND INSPECTION REPORT (WD, IGD Form No. 1). Used for inventory and inspection of property for condemnation.

MEMORANDUM RECEIPT (WD, QMC Form No. 487). Receipt signed for property issued by accountable officer to individual who assumes responsibility.

OVER, SHORT, AND DAMAGED REPORT (WD, QMC Form No. 445). Used to effect adjustment of discrepancies in property accountability occurring in storage or transit, for making changes in nomenclature, and for other uses prescribed by army regulations.

RECEIVING REPORT (WD, QMC Form No. 431). Used as voucher to stock record account to cover receipt and acceptance of articles purchased.

REGISTER VOUCHER TO STOCK ACCOUNT (WD, QMC Form No. 480). Used to keep record of serial numbers assigned to stock record account, and to provide ready reference register of such vouchers.

REPORT OF SURVEY (WD, AGO Form No. 15). Property requiring action of a surveying officer is listed on this form.

REQUISITION (WD, QMC Form No. 400). Used in submitting requests for all supplies except those for which special forms are required.

REQUISITION REGISTER (WD, QMC Form No. 479). Used in keeping record of all requisitions received by a supply officer, and action taken thereon.

SHIPPING DOCUMENT (WD, AGO Form No. 450-5-B and No. 450-5-C). Form combining data formerly shown on tally-out, shipping ticket, and packing list forms. Enough copies accompany each shipment for use at holding and reconsignment points, staging areas, ports of embarkation, and ports of debarkation for tally-in and tally-out purposes, and for use of consignee in covering tally-in and receiving requirements.

STOCK RECORD CARD (WD, QMC Form No. 424). Used for keeping stock record accounts of supply officer at army and communications zone depots.

TALLY SHEET, INCOMING (WD, QMC Form No. 489). Used where shipping document is not used; shows on front side all data regarding property required; and on reverse side data regarding packages received in damaged condition.

TALLY SHEET, OUTGOING (WD, QMC Form No. 490). Used where shipping document is not used, to serve same purpose for outgoing shipments as tally-in form serves for incoming shipments; is filed as record of property shipped or issued.

APPENDIX III

STORAGE CHART FOR EXPLOSIVES AND CHEMICAL AMMUNITION STORED AND ISSUED BY THE CHEMICAL WARFARE SERVICE

GROUP A	PERSISTENT GAS MUNITIONS TOXIC GAS SET
GROUP B	SMOKE MUNITIONS (FS, FM) NONPERSISTENT GAS SHELLS FRANGIBLE GRENADES (AC, CNS) GAS CANDLES (DM) CAPSULES (CN)
GROUP C	WP-FILLED MUNITIONS FRANGIBLE GRENADES (AW)
GROUP D	INCENDIARY BOMBS INCENDIARY GRENADES (IM, NP, TH) MISCELLANEOUS INCENDIARY MUNITIONS TEAR GRENADES (CN-DM, CN) SMOKE GRENADES (EXCEPT WP) SMOKE POTS TEAR POTS
EXPLOSIVES	HE SHELLS
EXPLOSIVES	PROPELLING CHARGES
EXPLOSIVES	DETONATORS FUZES GRENADE IGNITERS FUZE LIGHTERS ELECTRIC SQUIBS

NOTE: These are all Class V supplies, but are kept in a storage area apart from toxic gases (also Class V) as described in paragraph 23. Chemical warfare ammunition listed above is divided into Groups A, B, C, and D for storage. Explosives, while not Chemical Warfare Service materiel, are nevertheless stored by the Chemical Warfare Service and must be separated as shown above.

